HIPOTRONICS, INC.

MODEL NO. HDB4
PART NO. 11-344

Hipotronics inc.

applied high voltage technology for industry utilities & science

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*** DANGER HIGH VOLTAGE ***

WARNING: The products described in this publication are designed to supply high voltage. Accordingly, maximum safeguards have been built into the equipment and instructions for operation have been prepared in such a manner as to emphasize the best safety techniques possible. Additionally, much effort has been expended to caution the user to exercise care in the use of certain controls and at appropriate points in the operating procedures. Nevertheless, when using this equipment, the user is cautioned to maintain a safety consciousness at all times. In particular, before connecting input power, be sure to ground case. Before ungrounding case, be sure to disconnect input power.

ADDENDUM

The LEAKAGE ADJUSTMENT and KILOVOLTMETER potentiometers are located on the printed circuit board inside the unit facing rear.

The LEAKAGE ADJUSTMENT potentiometer is located on the LEFT. The KILOVOLTMETER potentiometer on the RIGHT.

Leakage Adjust

VM Cal

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SCOPE

This publication describes the Hipotronics HD Series of Hipot Testers. It is intended to provide a simplified reference for users of this equipment, and allow them to make use of its features quickly, safely and efficiently.

Information in this publication applies to all models in the HD Series. Information pertinent to the specific model purchased is provided in the pocket of the back cover of the publication. This includes an electrical schematic and a parts list.

The publication contains four major sections: General Description Installation Instructions, Operation Instructions and Special Operations.

The General Description section describes the major features of the models in the HD Series and also contains a description of the functions performed by each of the controls and indicators on the control panel.

The Installation Instructions section provides step-by-step instructions for the installation or set-up of the unit.

The Operation Instructions section provides step-by-step instructions for utilizing the HD Series of Hipot Testers.

The Special Operations section describes the procedures involved in Kilovoltmeter Recalibration and Trouble Shooting.

GENERAL DESCRIPTION

This section is intended to acquaint the user with the major features of the models in the HD Series. The functions and uses of the controls and indicators are described below.

Features and Specifications

The HD Series of Hipot Testers is designed for simple and reliable production line testing. Each model has continuously variable output voltage and output connected kV meter providing optimum test accuracy. Non-destructive testing is ensured with a sensitive leakage and arc detection system.

Features include:

- an AC power ON switch, an internal fuse and a pilot light
- continuously adjustable output voltage control
- corona network arc detector and indicator
- a shielded output lead with an alligator clip termination

Controls and Indicators

The functions and uses of the various controls and indicators are described below.

KILOVOLTMETER

This output connected kilovoltmeter measures the amount of output voltage being delivered to the test sample. The maximum output voltage of each unit in the HD Series is indicated by the digit after the series indicator. Example: an HD-A3 is a 3 kV ac unit. (A for AC, B for DC)

LEAKAGE detector

The leakage adjustment potentiometer located on the printed circuit board inside the unit, sets the trip point of the leakage detector. This setting may be adjusted to a value between 500uA and 5mA. An appropriate resistor must be used to give required leakage current at a selected voltage. The unit will trip when the test sample draws more current than the leakage detector is set for.

ARCING lamp

The arcing lamp will light up when any component leakage or arcing is detected.

RAISE VOLTAGE

The output voltage is regulated by means of the RAISE VOLTAGE control. The markings around the control indicate the percentage by which the voltage may be increased.

AC POWER CONTROLS

The AC POWER section on the control panel contains an on/off toggle switch and an indicator light that glows when the unit is on.

HV OUT

The high voltage re-entrant jack must be interconnected to the high side of the test sample with the factory provided test lead.

GROUND

The GROUND stud should be connected to the low side of the test sample.

INSTALLATION INSTRUCTIONS

This section provides step-by-step instructions for the installation and set-up of the A and B Series of Hipot Testers.

1. Select a location for the unit that will place the meters at eye level to allow maximum accuracy in readings.

2. Set the RAISE VOLTAGE control to "0" and check to ensure that the AC POWER switch is in the OFF (down) position.

3. Ground the case before connecting the input power. The GROUND stud on the control panel may be used for this purpose.

4. Plug the line cord into a 115 V ac, 50/60 Hz outlet. If a two-prong adapter is used, be sure to ground the third wire.

5. Turn the AC POWER switch ON (up). The unit is now ready for operation.

OPERATION INSTRUCTIONS

This section provides step-by-step instructions for performing hipot testing.

1. Ensure that the unit is properly grounded and that the RAISE VOLTAGE control is set at "0".

2. Determine the appropriate resistor to meet test voltage requirements.

   Example: The desired leakage at 5kV is 1mA.

   $$R_1 = \frac{V}{I} = \frac{5 \times 10^3}{1 \times 10^{-3} A} \doteq 5 \text{ megohms}$$

   $$P = I^2R = (1 \times 10^{-3})^2 \text{ (5 megohms)} = 5 \text{ watts}$$

   Select a 5 megohm, 5 W resistor

3. Turn the AC POWER ON.

4. Increase the voltage to the desired level with the RAISE VOLTAGE control. Turn the leakage adjust potentiometer until the leakage light glows. The leakage current limit is now set.

5. Return the RAISE VOLTAGE control to "0".

6. Connect the high voltage lead to the high side of the test sample. The ground should be connected to the low side.

7. Raise the output control to the desired value. Arcing in the sample will be indicated on the arcing lamp. If the sample draws more current than the leakage detector is set for, the leakage light will glow.

SPECIAL OPERATIONS

This section describes the step-by-step procedures required to perform any special operations incidental to the major functions described in the preceding sections. These special operations are kilovoltmeter recalibration and trouble shooting.

1. Ensure that the RAISE VOLTAGE control is set at "0" and the high voltage is off. The meter needle should be adjusted to the zero position.

2. Select a location for the unit that will place the kilovoltmeter at a level allowing maximum accuracy in calibration.

3. Remove the rear panel of the unit for access to the calibrati potentiometer (R3).

4. Hook up the high voltage end of a standard meter to the high voltage output of the unit.

5. The low end of the standard meter should be connected to the ground on the unit.

6. Turn the AC POWER ON.

7. Increase the output voltage with the RAISE VOLTAGE control to about 3/4 of the full scale on the meter.

8. Check the reading on the standard meter.

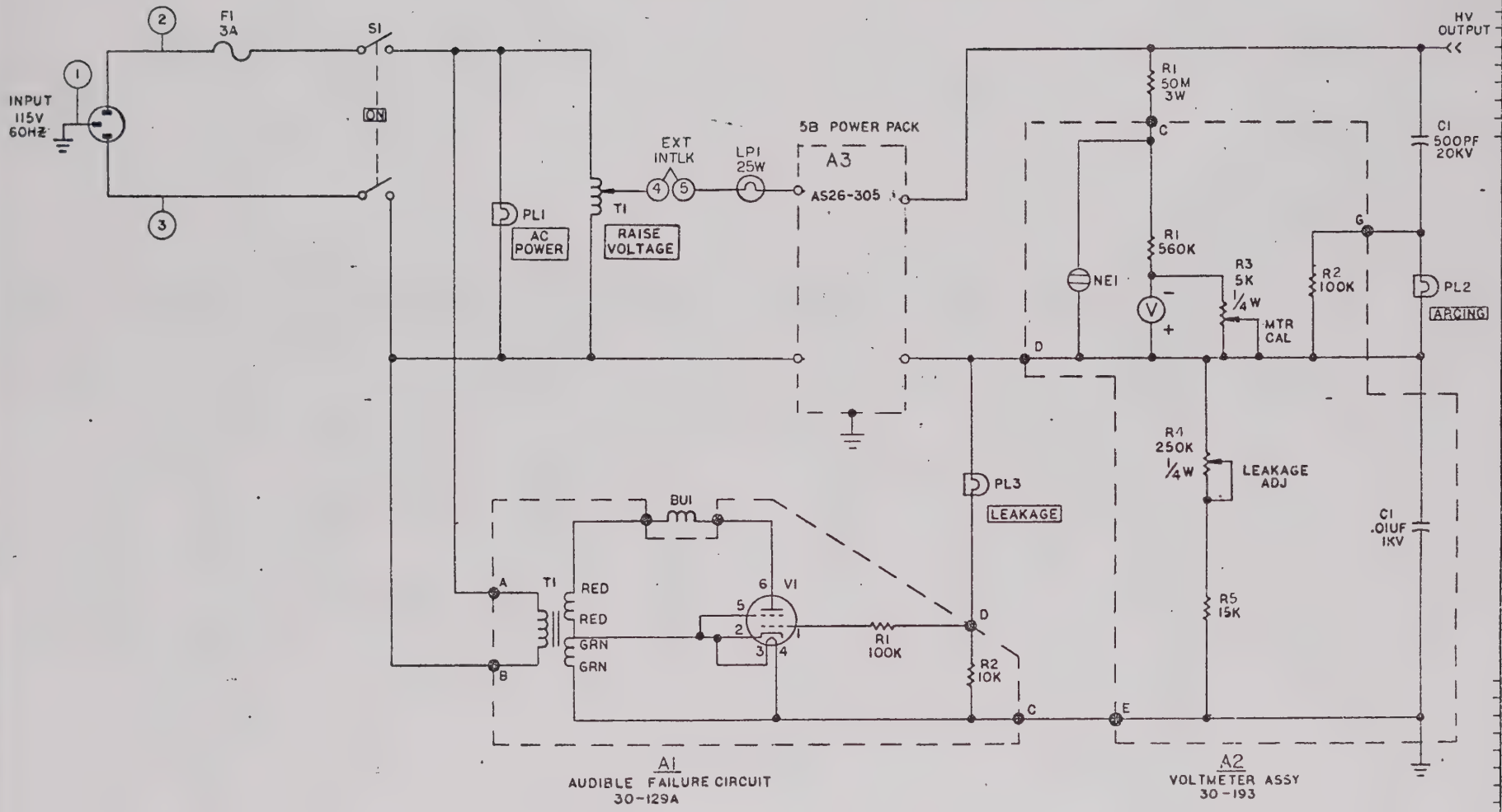
9. Use an insulated screwdriver to adjust the unit meter with the calibration potentiometer.

10. Reduce the RAISE VOLTAGE powerstat to "0". The unit is now calibrated.

PROBLEM	POSSIBLE CAUSE	RECOMMENDED ACTION
NO HIGH VOLTAGE OUTPUT	a. Damage to T2 Transformer b. Damage to T1 Variac (RAISE VOLTAGE control)	a&b Check output of component with external voltmeter; replace if necessary.
LOW VOLTMETER READINGS	a. Voltmeter out of adjustment. b. Damage to C1 capacitor. c. Low line voltage	a. Recalibrate voltmeter. b. Replace C1 capacitor. c. Obtain reading at power source and inform responsible authority.
ERRATIC HIGH VOLTAGE OUTPUT	a. Variac (RAISE VOLTAGE control) brushes dirty or worn b. Fluctuating line voltage.	a. Clean or replace Variac brushes. b. Obtain reading at power source and inform responsible authority.
AC OUTPUT OK; NO DC OUTPUT	a. Faulty CR1 diode.	a. Replace CR1 diode.
ERRATIC OUTPUT CURRENT	a. Arcing from R1 Resistor. b. Internal arcing in T2 Transformer.	a. Replace R1 Resistor. b. Check output current from T2 Transform replace if not constant.

PROBLEM	POSSIBLE CAUSE	RECOMMENDED ACTION
RAISING VOLTAGE BLOWS FUSE (NO LOAD)	a. Damage to T1 Variac. b. Faulty component in HIGH VOLTAGE section.	a. Check Variac and brushes for burn marks; replace if damaged. b. Disconnect input to C1 capacitor and raise voltage. If fuse does not blow, check and replace faulty C1 capacitor or CR1 diode.

LTR	DESCRIPTION	DATE	APPROVED



QTY	DESCRIPTION	PART NO	MAT'L OR NOTE	ITEM
	DC HIPOT TESTER			

HIPOTRONICS
BREWSTER, N.Y.

MAT'L	NEXT ASSY	MODEL NO 110H 4	SERIAL NO
FINISH	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES	DRN KEN DATE 5/8/70	DWG NO. CSII-344-2 REV.
	FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±30'	CHECKED APPROVED	SCALE

PARTS LIST

MODEL NO. HDB4
PART NO. 11-344-2B

A1	Subassemhly, Audible Failure Circuit, P/N 30-129A
A2	Subassembly, Meter, PCG, P/N 30-193-2
BU1	Buzzer, P&B 115 V
CAB	Cabinet, Hipo 7 x 12
C1	Capacitor, 2500 pF @ 30 kV
A2C1	Capacitor, .1 uF @ 400 kV
F1	Fuse, 3 A, 3 AG
DF1	Fuse Holder, Buss HKP-CC
M1	Meter, (0-4 kV dc) 50 uA, Ideal 4500
A2NE1,2	Neon, NE2
PL1-3	Pilot Light, 3600 Leecraft
LP-1	Lamp, 25 W
R1	Resistor, 50 M ohms, 6 W
A2R1	Resistor, 220 k ohms, ½ W
A2R2	Resistor, 100 k ohms, ½ W
A2R3	Resistor, 1 k ohm, ½ W
A2R4	Resistor, 5 k ohms, Pot
A2R5	Resistor, 250 k ohms, Pot, ¼ W
A2R6	Resistor, 15 k ohms, ½ W
A-1R1	Resistor, 100 k ohms, ½ W, 10%
A-1R2	Resistor, 10 k ohms, PW
S1	Switch, 115 V, 15 A, Toggle, DPDT
NE1,2	Neon, NE2
T1	Transformer, Powerstat, Superior, 10B
PS-1	Power Pack, 5B
A-1T1	Transformer, R54Z 115/50 Hz
A1-V1	Tube, 2D21
A1-XV1	Tube, 7-PC-B

P1	(Cornish Line Cord) 3532-18/3SJ or Equiv.
SCH	File No., CS11-344-2
Option	
R7	Resistor, 56 k, 10 W
K1	Relay, DPDT, 120 V, PR11AYO

WARRANTY

HIPOTRONICS, INC. warrants to the original purchaser of any new merchandise that the merchandise is free from defects in material and workmanship under normal use and service for a period of one (1) year from the date of shipment. The obligation of Hipotronics, Inc. under this Warranty is limited, in its exclusive option, to repair, replace or issue credit for parts or materials which prove to be defective, and is subject to Purchaser's compliance with the Hipotronics, Inc. Warranty Claim Procedure as set forth below. The happening of any one or more of the following events will serve to void this Warranty and any defect or damage resulting therefrom is specifically excluded from Warranty coverage: (a) defects due to accident, negligence, alteration, modification, faulty installation, abuse or misuse by Purchaser or Purchaser's agents or employees; (b) attempted or actual dismantling, disassembling, service or repair by any person, firm or corporation not specifically authorized in writing by Hipotronics, Inc.; (c) defects caused by or due to handling by carrier, or incurred during shipment, transshipment or other move.

This Warranty covers only those parts and/or materials deemed by Hipotronics, Inc. to be defective within the meaning of this Warranty. The liability of Hipotronics, Inc. shall be limited to the repair, replacement or issuance of credit for parts deemed defective within the meaning of this Warranty. Costs incurred by purchaser for labor or other expenses incidental to the inspection, repair, replacement or issuance of credit for such parts and/or material shall be the sole responsibility of purchaser. This Warranty shall not apply to any accessories, parts, or materials not manufactured or supplied by Hipotronics, Inc. and if, in the sole discretion of Hipotronics, Inc., Purchaser's claim relates to any materials or workmanship manufactured or performed by the supplier of a component part, or of the manufacturer of a device of which the defective part is a component, Hipotronics, Inc. reserves the right to disclaim liability under this Warranty and to direct that the Purchaser deal directly with such supplier or manufacturer. Hipotronics, Inc. agrees to assist the purchaser in processing or settling any such claim without prejudicing its position as to liability.

WARRANTY CLAIM PROCEDURE Compliance with the following Warranty Claim Procedure is a condition precedent to the obligation of Hipotronics, Inc. under this Warranty:

(a) Purchaser must notify Hipotronics, Inc. in writing by certified or registered mail, of the defect claimed within twelve (12) months after date of original shipment. Said notice shall describe in detail the defect, the defective part, and the alleged cause of defect; (b) at the exclusive option of Hipotronics, Inc., Purchaser shall dismantle or disassemble at Purchaser's cost and expense and shall ship the defective part or material prepaid to Hipotronics, Inc., Brewster, New York 10509, for inspection, or permit an authorized service representative of Hipotronics, Inc. to inspect the defective part or material at Purchaser's premises. If Hipotronics, Inc. shall inspect the part or material at the Purchaser's premises, Purchaser shall provide facilities for, and at Purchaser's cost and expense, dismantle, disassemble, or otherwise make accessible the subject part or material whether or not same is a component of or installed in a device other than that manufactured or supplied by Hipotronics, Inc. If disclosure shows that the defect is not one for which Hipotronics, Inc. is liable, the Purchaser agrees to reimburse Hipotronics, Inc. for all expense incurred; (c) upon receipt of the defective part or material, or after access to same, Hipotronics, Inc. shall inspect the part or material to determine the validity of Purchaser's claim.

The validity of any Warranty Claim, Purchaser's compliance with Hipotronics, Inc. Warranty Claim Procedure, the obligation to either repair, replace, or issue credit, or direct the purchaser to deal directly with a manufacturer or supplier are to be determined solely and exclusively by Hipotronics, Inc. and any determination so made shall be final and binding.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ON THE PART OF HIPOTRONICS, INC., INCLUDING THE WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR USE, AND CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH THEREOF AND HIPOTRONICS, INC. NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM OR CORPORATION TO ASSUME ANY LIABILITY OR OBLIGATION IN CONNECTION WITH THIS SALE ON ITS BEHALF AND PURCHASER ACKNOWLEDGES THAT NO REPRESENTATIONS EXCEPT THOSE MADE HEREIN HAVE BEEN MADE TO PURCHASER.

RETURNED MATERIAL FORM

If, for any reason, it should become necessary to return the equipment described in this publication to the factory, the Warranty Service Department of HIPOTRONICS must be contacted, at which time the following data must be given in order that we may identify the unit and determine the necessity for return. [Tel. (914) 279-8035] MODEL, SERIAL NO. and TYPE (Part No.) is indicated on the black and silver tag affixed to the unit.

MODEL: _____

SERIAL NUMBER: _____

TYPE (Part No.): _____

REASON FOR RETURN: _____

DEFECT: _____

ALLEGED CAUSE OF DEFECT: _____

If HIPOTRONICS deems return of the unit appropriate, an "Authorization for Return" tag will be issued. This will instruct you as to the method of return. The pink copy is for your records, the hard copy to be affixed to the unit being returned. If return is not deemed advisable, other inspection arrangements will be made.

NOTE

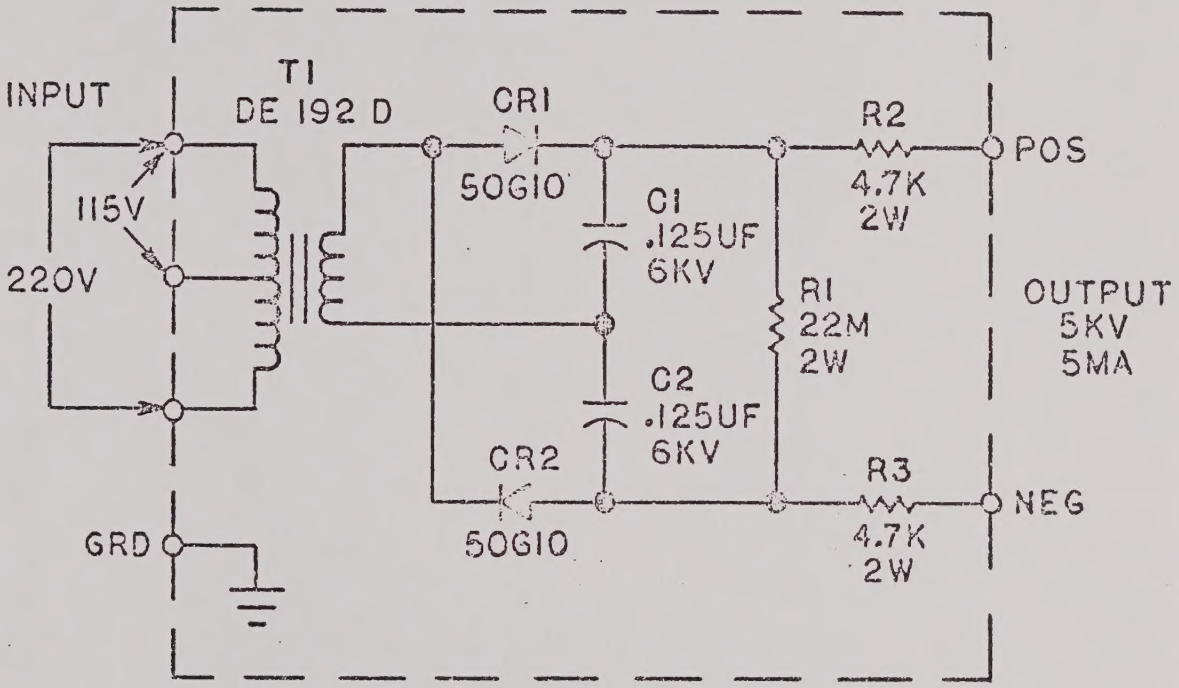
Material received at this plant without the proper authorization shall be held as "customer's property," with no service performed until such time as the proper steps have been taken.

Your cooperation is requested in order to ensure prompt service. Thank you.

PARTS ORDERING

To order replacement parts for this unit, please refer to the Parts List contained in the pocket of this publication. The number of the specific component is required, along with the TYPE (Part No.) of the unit. The TYPE (Part No.) is indicated on your Parts List, and on the black and silver tag affixed to the unit.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
B	REDRAWN	10/80	



DC POWER PACK

HIPOTRONICS
BREWSTER, N.Y.

NEXT ASSY		MODEL NO 5B			
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES		DRAWN JAR	DATE 10/80	DWG NO. AS26-305	REV B
		CHECKED W.P.	10-80		
FRACTIONS ±1/64	DECIMALS ±.005	ANGLES ±30'	APPROVED W.T.P.	SCALE	SHT OF

MP MASTER
MA35496

92188